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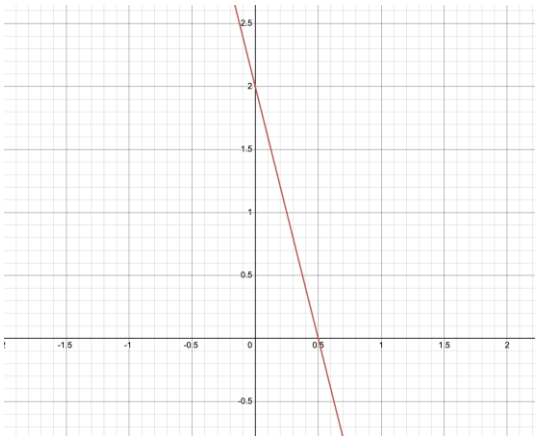
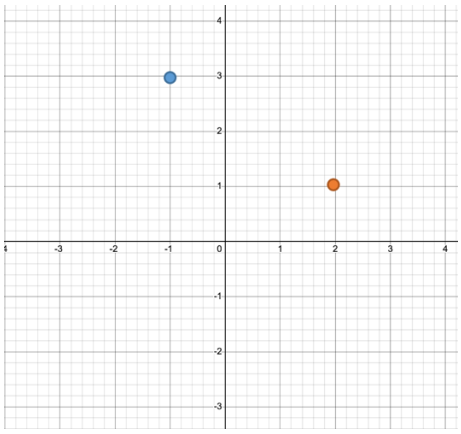
Theoretical:

Q1: Consider the plot of a straight line in (a). Give the equation of the line in slope-intercept, double-intercept and normal form.

Q2: Consider the two points $p_1 = (2,1)$ and $p_2 = (-1,3)$ shown in (b). Using the slope-intercept form of a line ($y = mx + b$), estimate the Hough accumulator values for detecting a straight line. For the accumulator $A(m, b)$, use a range of $(-1 \leq m < 5, -1 \leq b < 5)$, where m and b increment by values of 1. What is the detected line based on the maximum found in the accumulator and how does this compare to the true line?



(a)



(b)

Coding:

- Apply `cv2.HoughLines` to `Line.jpg`, using 80 and 50 as thresholds and compare the results

- Apply `cv2.HoughCircles` to `Circle.jpg`, and investigate the influence of param1 and param2
  - Blur the image with Median filter with size=5
  - Set circle radius with minRadius=50, maxRadius=65 and minDist=40
  - Try to set param1 and param2 as {80, 20}, {80, 10} and {50, 20}, and see the difference on outputs
  - Apply circle detection on the unblurred image using the best parameters found above and check for differences in the output

Past Quiz Questions:

- AY2122_Quiz1: Q6